

**United States Patent** [19]

Fidel et al.

[11] **Patent Number:** **4,601,292**[45] **Date of Patent:** **Jul. 22, 1986**[54] **STEERABLE DOPPLER TRANSDUCER PROBES**[75] **Inventors:** **Howard F. Fidel, Hartsdale; David L. Greenwood, New York, both of N.Y.**[73] **Assignee:** **Johnson & Johnson Ultrasound, Inc., Ramsey, N.J.**[21] **Appl. No.:** **669,703**[22] **Filed:** **Nov. 8, 1984**[51] **Int. Cl.<sup>4</sup>** ..... **A61B 10/00**[52] **U.S. Cl.** ..... **128/660; 128/661; 128/663; 73/625**[58] **Field of Search** ..... **128/660, 661, 663; 73/618, 621, 633, 861.25, 625, 628, 641**[56] **References Cited****U.S. PATENT DOCUMENTS**

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*Primary Examiner*—Kyle L. Howell*Assistant Examiner*—Ruth S. Smith*Attorney, Agent, or Firm*—W. Brinton Yorks, Jr.[57] **ABSTRACT**

An ultrasonic diagnostic probe is provided which performs simultaneous ultrasonic imaging and Doppler flow measurement. The Doppler transducer is mounted for rotation by a mechanical assembly, which permits the Doppler beam to be steered during imaging to the point in the body where a flow measurement is to be taken. As the Doppler transducer is rotated, a variable impedance device within the probe is adjusted in correspondence with the transducer rotation so as to provide an indication signal of the direction in which the Doppler beam is being directed.

**13 Claims, 8 Drawing Figures**